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10/039,126	01/03/2002	Dong-Jun Kim	SAM-0203	1062

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Anthony P. Onello, Jr., Esq.
Mills & Onello LLP
Suite 605
Eleven Beacon Street
Boston, MA 02108

EXAMINER

NHU, DAVID

ART UNIT PAPER NUMBER

2818

DATE MAILED: 12/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/039,126

Applicant(s)

KIM ET AL.

Examiner

David Nhu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 18-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-10 and 12-17 is/are rejected.
- 7) ☒ Claim(s) 2, 3 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTIONS

Election/Restrictions

1. *Applicant's election of Group I (Claims 1-17) in page No.6 is acknowledge. Claims 1-17 are remained for examination. Accordingly, claims 18-26 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.*

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

It appears that the original specification does not have support for **"the gate mask operating as an etch mask during fabrication of the semiconductor memory device to define the underlying charge storage region and the control gate "**, which were not described in the specifications.

Kim et al (10/039126) do not disclose " the gate mask operating as an etch mask during fabrication of the semiconductor memory device to define the underlying charge storage region and the control gate" in claim 1, is taken to be a product by process limitation and consider non-limitation. In a product-by-process claim, it is the patentability of the claimed product and not of the recited process steps which must be

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established. Therefore, when the prior art discloses a product which reasonably appears to be identical with or only slightly different than the product claimed in a product-by process claim, a rejection based on sections 102 or 103 is fair. The Patent Office is not equipped to manufacture products by a myriad of processes put before it and then obtain prior art product and make physical comparisons therewith. In re Brown, 173 USPQ 685 (CCPA 1972). Also, a product by process claim directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 1 S at 17 (footnote 3). See In re Fessman, 180 USPQ 324, 326 (CCPA 1974); In re Marosi et al., 218 USPQ 289, 292 (Fed. Cir. 1983); and particularly In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps, which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old and obvious product produced by a new method is not a patentable product, whether claimed in "product by process" claims or not.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 7- 9, 10, 12-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang (6,125,060).

Regarding to claim 1, Chang, figures 1-7, and related text on col. 1-12, (figures 1a-1g, 7a-7d,

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col. 3, lines 51-67, col. 4-6, lines 1-67, col. 8, lines 41-67, col. 9, lines 1-41), disclose a non-volatile semiconductor memory device comprising: a substrate 100; a charge storage region 103 on the substrate; a control gate 101 on the charge storage region; and a gate mask 122, 125 on the control gate, wherein the gate mask is in a shape of a spacer (see figure 7d). Regarding claims 7-9, see Chang, figures 1a, 7d, col. 51-67, col. 4, lines 1-14, col. 9, lines 1-29.

Regarding claim 10, Chang, figures 1-7, and related text on col. 1-12, (figures 1a-1g, col. 3, lines 51-67, col. 4-6, lines 1-67), disclose a non-volatile semiconductor memory device comprising: a substrate 100 having a source 105 and a drain 108; a channel 113 between the source and the drain; a charge storage region 103 on the channel; a control gate 101 on the charge storage region; a gate mask 125 being formed on an entire top surface of the control gate and being in the shape of a spacer; and a select gate 122, 125 on the channel and between the charge storage region and the drain; the charge storage region, the channel, the drain, the control gate, and the select gate forming a first unit cell.

Regarding claims 12-17, see Chang, col. 1-12, lines 1-67.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4-9, 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang

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(6,125,060) in view of Yi (5,455,792).

Chang fails to teach wherein the first unit cell further comprises a LDD spacer on a sidewall of the select gate; a drain formed in the substrate adjacent to the select gate and opposite to the conductive region; a bit line electrode electrically connected to the drain; a source electrode on the conductive region, wherein the source electrode is electrically isolated from the control gate by a source-side spacer.

However, Yi, figures 1-14, col. 1-20, teach the first unit cell further comprises a LDD spacer on a sidewall of the select gate; a drain formed in the substrate adjacent to the select gate and opposite to the conductive region; a bit line electrode electrically connected to the drain; a source electrode on the conductive region, wherein the source electrode is electrically isolated from the control gate by a source-side spacer.

Allowable Subject Matter

8. Claims 2, 3, 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 2, 3, 11 include allowable subject matter since the prior made of record and considered pertinent to the applicant's disclosure does not teach or suggest the claimed limitations. Because Chang and YI taken individually or in combination, do not teach : a select gate formed on the substrate and a sidewall of the charge storage region; a conductive region formed on the substrate adjacent another sidewall of the charge storage region, the charge storage region, the control gate, the gate mask and the select gate forming a first unit cell; a

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second unit cell being symmetrical and opposite to the first unit cell, wherein the first unit and the second unit cell share the conductive region.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Chang'530, Chang'131, Wang'185 are cited as of interest.

10. A shortened statutory period for response to this action is set to expired 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see 710.02 (b)).

11. Any inquiry concerning this communication on earlier communications from the examiner should be directed to David Nhu, (703) 306- 5796. The examiner can normally be reached on Monday-Friday from 7:30 AM to 5:00 PM. The examiner's supervisor, David Nelms can be reached on (703) 308-4910.

The fax phone number for the organization where this application or proceeding is assigned is (703) 308-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956

David Nhu 

December 11, 2003

